Soundscape Project TUB

Experimental Design:

Multidimensional mapping as a new way of composing:

**Using soundscapes with effects,
melodies produced from data,
and sound-samples of previous semesters
to create an instrumental storyline.**

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1. Participants

苗澍晗 / Shuhan Miao

made in China since 2000, started 03.2022 his B.Sc in Electrical Engineering at TU Berlin after saving enough money to come to Germany. He has been the guitar player for the band member of "临时乐队" since 07.2022. In terms of music, he is particularly interested in music from different ethnic backgrounds, as well as ambient and alternative music genres. He recently started a project for music sessions in experimental forms, for example “A Tribute + Jam Session to Ryuichi Sakamoto” and “Food Jam”, which can be found via miaojam.site.

Hannes Hügel / Dr. Acoustic

from Germany / born 1992. Since 2023 M.Sc in Audio Communication and -technology at TU Berlin. B.Sc in Electrical Engineering in Hochschule Karlsruhe. There he was Rhythm-Guitarist with focus on Sound-Effects of the Psyrock-Band “Nenitos”. He produced their Album, and shared it under his new pseudonym Dr. Acoustic, which is an allusion to his Transylvanian origin. Now he is independently producing unconventional Music. From the Creation of Sound, through Audio-processing, to the Playback on his specialized Soundsystem, he wants to do it all, always looking for the sweet spot.

Marcel Heine

from Germany and born in 1999. He began studying traffic engineering 2017 at TU Berlin, where he got his bachelor in 2021 and is nowadays studying transportation planning and operation as a master student. From his study he got to know the importance of soundscapes since traffic always had an important effect on the soundscapes which shape our environment. As he has no experience in creating music but always enjoyed listening to various styles of music, he tries to explore and produce sounds which are not conventional.

2. Introduction / Motivation: Discrimination of Sound

The word discrimination is commonly understood as “the practice of treating somebody or a particular group in society less fairly than others”[1]. What do we mean when we talk about the mere discrimination of sound? How is it being implemented throughout our daily life experiences? Within the scope of the municipal Berlin itself, there are a handful of aspects to open this discussion.

2.1 The social-economical aspect of sounds and music

The soundscape which we are experiencing today is the consequences of about 150 years of urbanization. We are confronting questions about quality of life in relation to efficiency and economic benefits. The design of soundscape during the urbanization[2] does not seem to take deeper consideration of the residences’ aesthetic and health condition. Traffic noise[3][4] and voices of commercial media are constantly surrounding one’s hearing experiences at home or on the streets. One reason can be that it is not profitable as others.

Music has also grown its own industry. The traditional form of playing a folk instrument in front of a small group of audiences has lost its allure. Electronic music has taken over the city for several decades, and now pop music is filling the majority of its citizen’s headphones. Live Show scenes and record labels are to a large extent limited to certain genres of music.[5] Music stores sell mostly popular instruments built with resource- and energy-consuming industrial processes[6]. Our focus is to widen the hearing of the listeners, and let unconventional instruments, melodies and mix of soundscapes describe a new style of music, which triggers different, than usual musical emotions.

2.2 Mapping previous semester outcomes in one piece of music

The soundscape project of the Technical University Berlin has existed for three semesters long. There are a number of interesting projects that deal with soundscape in various forms. An ideal approach is to take advantage of the fruitful outcome of the past results and implement them in our projects. This can be done by using produced samples of experimental instruments or recorded soundscapes of previous semesters, and mapping them in a musical composition.

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[1] Oxford Learner’s Dictionary
[2] Determination of the soundscape cost index through soundscape data collection and the use of psychoacoustic metrics, RWTH Aachen
[3] Lärmkarte Berlin 2018 “So laut ist es vor Ihrer Haustür”, Berliner Morgenpost
[4] One of the ideas experimenting with the noise can be found via urban-audio.org
[5] The Racism of Music Genres
[6] Instrumental Discrimination

3. Experimental way of composing

The idea is to create a piece of music, about the topic of discrimination. Sound material is gathered through jam-sessions and later post produced. The following methods are used.

3.1. Composing along a story with the use of keywords

A composition which intends to express feelings can be developed by following a storyline of a protagonist. The story consists of different parts, which are composed individually. Transitions between the parts connect them. The story helps to create a composition. It is not intended for publication. The Story is derived to keywords, which are used in the notation to clarify the course of time. The story details are used to compose more detail. The approach emerges through empathic abilities to express the feelings of the protagonist through the sounds of a complex patched synthesizer. Played melodic patterns and timbre and volume express his feelings. The influence of the outer world to the protagonist is expressed by soundscapes (field recordings), effects will be applied to change their impact on the protagonist. Different antagonists, or supporting characters, are expressed by different unconventional or ethnical instruments. Modulation of effects and volume to express their emotion or their interaction with him. Other new or unconventional instruments can emphasize the situations.

3.2 Story

PART 1:

A musician enjoyed popularity in his homeland **[HOME]**, where his music resonated deeply with everyone. People loved his melodies, which carried emotions and stories that spoke to their souls. **[FAME]** However, as time passed, the country faced challenging times. The government started to put restrictions on artists, trying to control what they could say or sing. He was forced into exile **[TRAVEL]**.

PART 2:

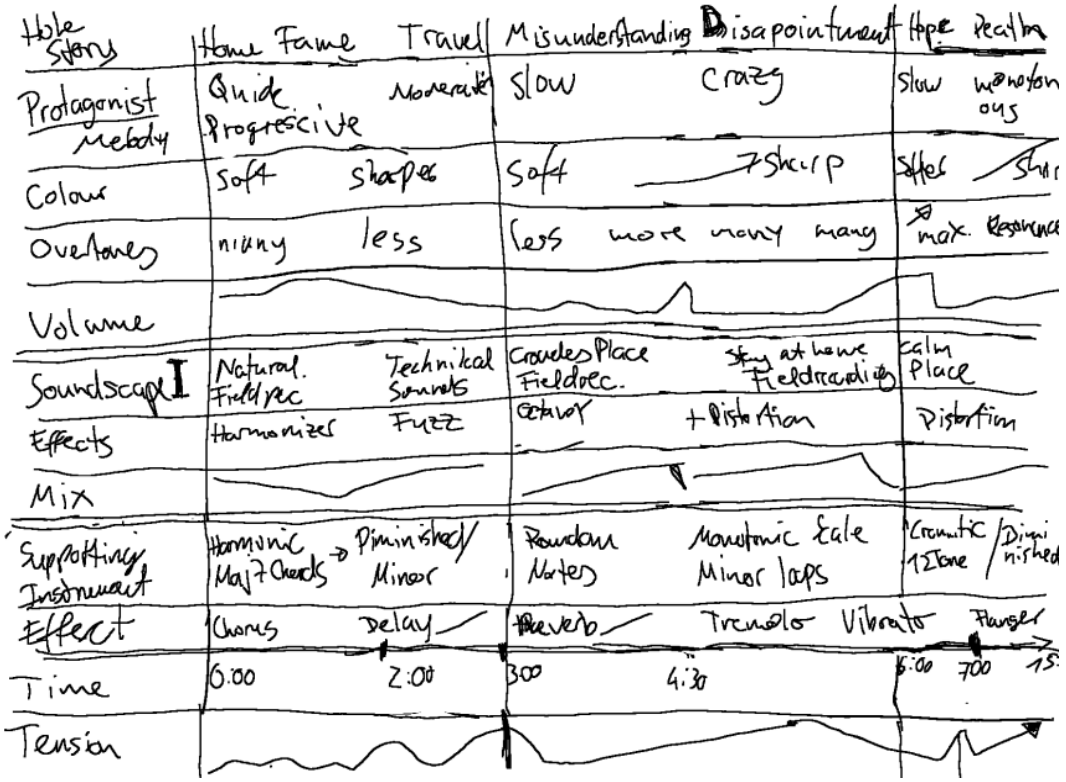
In the foreign country where the expression of his traditional music didn't seem attractive to others, even the living situation and language barriers made his living hard **[MISUNDERSTANDING]**. His concerts weren't appreciated, he didn’t get locations to play, and in street concerts, he was often discriminated against by locals, which meant that there was no place for him here. The disappointment **[DISAPPOINTMENT]** of the discrimination he faced, in different ways. The disappointment of the discrimination he faced, in different ways, in this new country impacted his musical life.

PART 3:

Despite the disappointment, he pursued creating music and put his emotions into his music, hoping to overcome the barriers of discrimination. Over time, his talent began to gain recognition among people in the country who appreciated the uniqueness of his ethnic music **[HOPE]**. Gradually, his reputation spread beyond borders, and his compositions went beyond cultural boundaries. This showed that music has the ability to overcome discrimination and unite people from all around the world. Sadly, something terrible happened to him. He was a victim of a senseless act of violence driven by racism **[DEATH]**

3.3 Compositional sketch

The sketch shows a new notation system. Its focus is not in the time variant or pitch as the conventional system. Its focus is in using melodic scales of instruments, and their timbre, as the influence of effect and their strength.



The suspense-curve, or any other illustrated curve can be used to modulate effect parameters, volumes etc. with the use of automation-curves with a Digital-Audio-Workstation, or by change of analog effects by hand, while following the composition. The composition has no time fixed process, because the outcome of sound will be random to a certain amount, due to multiple influences by musicians. The piece has to be led by a conductor.

3.4 End of the composition

The topic “discrimination” is an ongoing problem of humanity. This is why even after the protagonist is murdered, the music doesn’t stop, it continues even

longer than the actual piece before his death. The intention is that the soundscape is getting so horrifying and unpleasant that the listener stops listening to him-/herself. This leaves the message: “We shouldn't wait for the happy end and the end of discrimination, we have to actively stop it ourselves”

3.5. Sonification of Data related to discrimination for Midi-Melodies

Discrimination continues to be a persistent issue within educational institutions, including universities. Sonification is a powerful technique for representing data through sound, providing an auditory dimension that can reveal patterns and relationships not easily discernible in the visual domain. Through collected data, an employed sonification by students shed light on the prevalence and patterns of discrimination within the university context, which provides a multidimensional perspective on this complex issue, enabling a more immersive and impactful understanding of the data with own created midi-melodies and processed soundtracks. Melodies or Soundpieces will be produced independently by another group of this semester, and mapped into this composition.

3.6 Sampling Methods (collection of former semester)

The recordings used for the sampling have three different backgrounds:
1. Recordings of sounds from the TU campus from the previous semesters of the soundscape project
2. Recordings of the self build instruments from the previous semesters of the soundscape project
3. Open-source recordings of calm and stormy places in nature

In order to suit the requirement that the recordings have to be either made by previous participants of the soundscape project or open-source, the records of sounds in nature are downloaded from the free-license website pixabay.com.

The first step of the sampling process is to shorten the recordings in order to emphasize noticeable sounds. Some sounds are supposed to be as short as possible, so that the so-called “1 shots” can be used as a percussive element. Additionally, the cutting process aims at providing samples that begin at zero seconds with the sounds. This prevents involuntary times with no noise in the samples.

3.7 Way of Presentation

The produced and used sounds are put into a composition and there will be a final musical piece as output. Optionally the sound-file is 3-dimensional. Using a plugin, which uses head-related-transfer-functions (HRTF)-filters. The piece can

be performed live in a stereo setup. Therefore, there are four performative tasks:

1.Mixing, Equalizing, Panning
2.Playing the Midi files and adjust the synth sounds of protagonist
3.Playing samples and adjusting their effects
4.Playing supportive instruments and effects.

Each task can be done by one person. Two persons per task enrich the variety of sound modulation. More Instruments, effects operators and sampling-persons can take part.

4. Used instruments

For recording and jamming with different sounds, a digital 12-channel mixer (TASCAM MODEL 12) will be used. It includes an interface for the ability to record and catch random fitting sounds in jams for the final result. Following sources of sounds are used as input:

4.1 Protagonist / patched modular synthesizers

Melody is reproduced by midi-files from data, as described in 3.5. Sound synthesis is done by a modular synthesizer, which signals can be patched in creative manner. Multiple oscillators can be adjusted in waveform, to change the timbre of the sound. Programmed sequencers can trigger signals or filter envelopes to add even more chaos to the melody. Effects such as reverb, distortion, delay, modulation are used to express the condition of the protagonist.

4.2 Soundscapes

Soundscapes are used to describe the surroundings of the story which takes place. Calm nature sounds to stormy city sound can express different situations and take impact on the protagonist, when these sounds interact. With the use of effects, field recordings of soundscapes can be modulated to change the quality of the sound and its meaning in the musical piece. Effects like tremolo, phaser, reverb/ delay can enrich the composition under an artistic/aesthetic point of view. Material of previous semesters can be mapped into this piece of music. This is one approach to use creative outcomes of multiple people and to create a composition that is influenced by the soundscape of the TU Berlin.

4.3 Self made-instruments

Samples of created instruments in previous semesters of the soundscape project are planned to be used in the composition, to have a final outcome,

which brings created sounds of the project into one piece. Effects like fuzz, distortion, and flanger can be added slightly to emphasize the composition in different ways.

4.4 Ethnic instruments

Potential sources are the field recordings, digital plug-ins of sound samples from the internet, ethnic instruments that can be found, borrowed or played by friends, in order to create some sounds that can be used for the composition. The variety of tones and styles should demonstrate the differences in cultural background and ethnicity behind such instruments, to create more dynamics and authenticity for the story. Under this category also falls the percussive instruments, these are often more available and possibly being made as samples and looped with.

Reference

1. https://www.oxfordlearnersdictionaries.com/definition/english/discrimination
2. https://publications.rwth-aachen.de/record/841056/files/841056.pdf
3. https://interaktiv.morgenpost.de/laermkarte-berlin/
4. http://www.urban-audio.org/home.html
5. https://www.reverenddoctormusic.com/notes/2020/8/22/the-racism-of-music-genres
6. https://interlude.hk/instrumental-discrimination/